

**CONTRIBUTION OF AFRICAN COUNTRIES TO THE DEVELOPMENT OF
THE AQUATIC COMMONS REPOSITORY AND THE CHALLENGES IN
SEARCHING FOR INFORMATION**

M.O. Ibeun

National Institute for Freshwater Fisheries Research (NIFFR)

P.M.B. 6006, Niger State, Nigeria

E-mail: moibeun@yahoo.com

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Abstract: The paper evaluates the contribution of African countries to the Aquatic Commons repository and highlights the problems encountered in searching for information in the system. Results showed that 82 agencies uploaded a total of 3,967 articles into the repository, but only 8 agencies or 9.8% of the total come from Africa. Those 8 contributed 596 entries or 15.4% of the total submissions to the repository. Nigeria alone contributed 81.5% of African contributions, or 12.6% of the total submissions. The total number of downloads as of July 2011 was 233,781, an increase of 154.8% when compared to June 2010. Nigeria downloaded 4.9% of the total and 69.5% of the total from African countries. The article suggests that the possible reasons for low level African participation are: ineptitude of African librarians and other stakeholders; lack of awareness of the project; lack of feedback mechanisms to participating agencies; and the language of the repository. Suggested ways to beef up African participation includes: identification of relevant agencies in the different countries; creating awareness among agencies; having a feedback mechanism for contributing institutions; and finding a way of accommodating actively the French speaking countries in Africa. The paper further evaluates problems in retrieving information on specific subjects and geographic areas. Results show that subject categorization used to describe the documents has lead to false drops in most searches, as the descriptors are not always accurate, and information on geographic areas is not precise. The paper recommends that since the Aquatic Commons is a growing collection, for ease of retrieving information a thesaurus must be used to describe the articles; otherwise it will be difficult to bring out the much of the useful information in the repository. The recommended thesaurus is the Aquatic Sciences and Fisheries Thesaurus.

Keywords: Aquatic Commons repository, information retrieval, information services, African countries, information handling, information systems, documentation, bibliographic information.

Introduction

It has been observed that the discovery of information technologies has positively enhanced the dissemination of information. Many methods have evolved for prompt sharing of information through well-established networking (Ibeun 2010). The Aquatic Commons Repository is a website that provides global access to digital bibliographic information of institutions, organizations and societies. It is an initiative of IAMSLIC and the membership of any research or development institutions is voluntary. It is a thematic digital repository covering the natural marine, estuarine/brackish and freshwater environments (Collins 2007).

Information sources that preceded the Aquatic Commons, such as ASFA, CAB, AGRIS, etc., have helped solve the problem of awareness and visibility but not accessibility to existing literature (Ibeun 2010). They have also helped create awareness of grey literature, which abounds in the subscribing institutions. Developing countries have used this to advantage. This discussion examines the level of contribution of African countries to the Aquatic Commons repository and the challenges of retrieving information from the system.

Methodology

Data for this study were collected from the Aquatic Commons website. The agencies uploading articles to the website were identified. The total number of articles uploaded to the repository as at May 2011 was summed up for comparison. The agencies and the articles uploaded from participating African countries were also identified. To determine the level of usage, countries that downloaded more than 2000 times as of July 2011 were identified to see how many African countries were in this group. Four search formulations were used in retrieving information from the repository. The system descriptors were evaluated with the document retrieved to assess the relevance and precision of subject descriptors used by those uploading articles to the repository.

Results and Discussion

Input to the repository from Africa: Technology development always starts from the developed countries, while developing countries like those in Africa import them for use. Some of these technologies are participatory in nature. Developing countries trail behind developed countries. This study shows that this is the trend in the Aquatic Commons project. There are 82 agencies listed on the Browse by issuing agency section of the Aquatic Commons website. When the number contributed by agencies are summed up, there are 3,867 entries. Table 1 shows that only 8 institutions from five African countries contribute entries to the repository. This number formed 9.8% of the total contributing agencies. These 8 institutions contributed 596 entries or 15.4% of the total submissions. Nigeria alone contributed 81.5% of African submissions, or 12.6% of the total contributions.

S/N	Country	Institutions	No. of Entries	Total Country Entries
A	Malawi	1. Bunda College of Agriculture	18	18
B.	Nigeria	2. Deutsche Gesellschaft fur Technische Zusammenarbeit (Nigeria Office)	19	486
		3. National Institute for Freshwater Fisheries Research	36	
		4. Fisheries Society of Nigeria	431	
C.	Uganda	5. Lake Victoria Fisheries Organization	73	75
		6. National Fisheries Resources Research Institute, Uganda	2	
D.	Tanzania	7. Tanzania Fisheries Research Institute	2	2
E.	Sierra Leone	University of Sierra Leone Fourah Bay College Institute of Marine Biology & Oceanography	15	15
Total	5	8		596

Table 1. Contributions from African countries.

Downloads From the Repository

The number of downloads from the repository as of July 2011 was 233,781. This was an increase of 154.8% compared with June 2010 for countries what downloaded over 2000 documents. Nigeria downloaded 11,445 times as shown on Table 2. This formed 4.9% of the total downloads from the repository. No other African countries downloaded more than 2,000.

Countries	June 2010	July 2011	% Increase in Downloads
USA	49,477	113,794	230%
India	8,236	18,873	229%
UK	5,223	11,654	223%
France	4,255	21,247	499%
Argentina	3,745	7,660	205%
Mexico	3,175	6,411	202%
Nigeria	3,173	11,445	361%
Philippines	2,913	8,094	278%
Canada	2,692	6,120	227%
Germany	2,532	15,825	625%
Turkey	2,243	3,135	140%
Malaysia	2,102	4,493	214%
Total	89,766	228,751	254.8%

Table 2: Improvement in the Number of Downloads

Out of the total downloads from Africa, Nigeria downloaded 64.2% and 59.2% in 2010 and 2011 respectively. It is easy to attribute this to the population of Nigeria. Generally analysis has shown that African countries have low levels of participation in the Aquatic Commons Projects both in input and usage. However, it is encouraging that some African countries such as Ghana, Egypt, Ethiopia, South Africa and Tanzania which do not yet contribute documents are using the repository as shown in Table 3. The number of downloads between June 2010 and July 2011 rose from 4,943 to 19,321, an increase of 291% for African countries within a span of a year. This is a good omen for Africa, for it shows increase in awareness of this important source of information materials for fisheries and aquatic scientists and libraries. This is an indication that the repository is fulfilling the purpose for which it was been created.

Countries	June 2010	July 2011	% Increase in Downloads
Nigeria	3,173	11,445	361%
Kenya	574	1,745	304%
Egypt	702	1,598	228%
Ghana	252	866	344%
Ethiopia	242	821	339%
South Africa	-	2,174	-
Tanzania	-	672	-
Total	4,943	19,321	391%

Table 3: Downloads From African Countries

Possible Reasons For Low Participation

There must be some reasons for the low levels of participation. Hopefully these reasons will call for self-evaluation and rededication to the project because African countries stand to gain tremendously from the development of the repository.

(a) **Ineptitude of African Librarians and Other Stakeholders**

The word ineptitude has been used in the sense of lack of skill. Most of the librarians probably lack the skill for uploading articles to the website. Also possible is the uncooperative attitude of the organization to provide required facilities to enhance participation. However, the doors of FAO through the ASFA project are wide open for assistance in helping any serious librarians and other stakeholders to upload. Also the staff of the FAO Fisheries Branch Library are available for mentoring and assistance in uploading entries from any African who seeks assistance. This probably explains why Nigeria uploaded 486 entries.

(b) **Lack of Commitment By Stakeholders**

By stakeholders, I mean librarians and relevant institutions. Participation in most international projects requires personal commitment by desk officers. It is the feeling of this author that stakeholders from African countries participating in Aquatic Commons projects are not committed enough to the project, although it would provide publicity and international recognition. Stakeholders from Africa should expand their levels of participation. The number of entries uploaded to the system from Nigeria is as a result of the commitment from the NIFFR Library in harnessing fisheries information in the country, and from the Fisheries Society of Nigeria, which is also committed to make its activities visible. The summation of this argument is that dedication and commitment is the key to effective participation in a project like Aquatic Commons.

(c) **Refusal to Create Awareness For the Project**

The concept of the Aquatic Commons was initiated by the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) in 2006 and presented to IAMSLIC members through IAMSLIC mail services. This was reinforced by FAO through ASFA Board meetings followed by personal correspondence from Jean Collins, who was then heading the FAO Fisheries Branch library of FAO. Jean Collins was the “Mother of African Fisheries Librarianship.” She found time to educate African librarians about current international happenings and ensured African participation in projects such as ASFA, IAMSLIC and Fisheries Networking. Internationally, IAMSLIC, ASFA and FAO have played roles in creating awareness of the project. The next stage was for the national partners in turn to champion the course of the Aquatic Commons Projects in their respective countries by contacting relevant stakeholders in the fisheries and aquatic sciences. The level at which this was done by AFRIAMSLIC members reflected the level of African participation.

(d) Lack of Feedback Mechanisms

The design of the Aquatic Commons website gives room for feedback. The “Browse by Issuing Agency” is an avenue for contributing agencies to check on what they have contributed. Feedback creates room for satisfaction and encourages further participation. The national partners should create a way for participating institutions not only to know what they have contributed but also to see it on the website. This means that the librarian must be a step ahead of contributing institutions if he/she is to have leadership role.

(e) Language of the Repository

There are about 50 countries in Africa and 29 have French as official language (http://en.wikipedia.org/wiki/List_of_countries). Since the language of the repository is in English, these French-speaking countries cannot participate fully, thereby reducing the level of their contribution. There are 21 English speaking countries in Africa (<http://englishspeakingcountries.org/Africa/>), and more of them are members of IAMSILIC, which has English as its official language. This explains why the countries that have contributed and used the repository most are English speaking, and why about 58% of African countries are likely not to be active participants in building and using the repository. IAMSILIC should intensify its membership drive in African French speaking countries.

Strategies For Increasing African Participation

Clearly the level of African participation in the Aquatic Commons repository is low. I have deliberately refrained from comparing submissions on Regional Groups (AFRIAMSILIC, CYAMUS, EURASILIC, Latin America, Pacific Islands, SAIL), but instead have focused on Africa. This does not mean that other regions do not also need to increase submissions to the project.

Since Nigeria contributed about 82.2% of submissions from Africa, I will share the strategies employed there.

- **Identification of Relevant Agencies.**

In Nigeria, from the beginning it was clearly important to identify organizations publishing on fisheries and aquatic sciences. The author then grouped the organizations into institutions, associations/societies, journal publishers and commercial publishers (Ibeun 2007). This grouping helped determine the strategy to be adopted in selling the Aquatic Commons Project to each group.

- **Creating Awareness For Participation**

Awareness was created through seminar presentations on “Participation in Aquatic Commons repository: advantages to fisheries institutions, scientists and publishers” (Ibeun 2007). The seminars made possible interaction and questions. The advantages of the project were highlighted and issues such as loss of copyright, safety of documents, loss of financial benefits and access to the website were clarified. Abridged editions of the seminar were sent to journal publishers to encourage their

participation. These efforts are responsible for the level of participation of Nigeria. Some of the advantages were that the authors and their works would be internationally visible, giving their work international recognition.

- **Feedback Mechanisms**

To sustain the level of participation, feedback is necessary. The mechanism adopted was a paper titled “International visibility and accessibility of articles in the proceedings of the Fisheries Society of Nigeria through Aquatic Commons repository” (Ibeun 2010). It highlighted the number of downloads from a particular proceedings that was first uploaded to the website and the different countries from which downloads were made. The paper also showed that out of the ten top downloads from the Aquatic Commons, a Nigerian paper from FISON proceedings was 8th. The paper concluded that more people have become aware and gained access to the proceedings of the society through participation in the Aquatic Commons repository (Ibeun 2010). Reaction to the presentation by members and officials of the society was positive.

Challenges in the Usage of the Aquatic Commons Website

The beauty of any repository, like any database, is the ability to retrieve information with a high rate of precision. To achieve this, the indexer must be consistent in the choice of indexing terms and adhere to the principle of classifying a document under the specific subject it treats. Consistency in the choice of indexing terms and adherence to this principle calls for the use of controlled vocabulary. This could be a problem in a repository like the Aquatic Commons where many people with different backgrounds input data. It could then be postulated that there could be high rate of false drops when retrieving information on specific subject areas from a database or a repository not using controlled vocabulary for its indexing. This is my experience from several attempts to find information on specialized subject areas in the Aquatic Commons. This is a great challenge for the repository. What comes up when one clicks on the “browse by subject” on the Aquatic Commons website is a list of broad subject categorizations in alphabetical order with numbers of entries against the subjects. When you click on a given subject, it brings all the “relevant” documents on the subject. To further find the relevant title, you have to go through the entries one by one. This is not only cumbersome, but time consuming. With a very small repository, this may suffice, but for a fast growing one like the Aquatic Commons, It is necessary to revisit the subject descriptors. To explain this, trial searches on specialized subjects were carried out using “search” space at the right hand side of the website. The findings and observations are reported in Table 4 and demonstrate the challenges in using the Aquatic Commons. The present subject allocation of the metal data is not very useful for a searcher wanting information on specialized subject areas.

Conclusion

The Aquatic Commons (AC) repository is an effective means of disseminating information in fisheries and aquatic sciences. It is highly useful for any African fisheries libraries to augment their small and often obsolete collections. It is a strong complementary source of information to the Aquatic Sciences and Fisheries Database

(ASFA). The rate of growth of the repository raises the prospect of its housing millions of entries in the near future. Therefore, African countries should be active participants by developing the necessary skills and going into partnership with other international institutions to upload relevant documents. Desk officers in participating African countries should show personal commitment and create awareness for the project, and set up feedback mechanisms to further stimulate the interest of participating agencies.

The reason for the mismatch of descriptors and the documents is probably the use of keywords in content. Free indexing is not acceptable for a specialized database the size of the Aquatic Commons. This will only lead to numerous false drops when retrieving information from the system. It is a common request from scientists that they need information from a given country. From the trial searches carried out, it appears that the repository is grossly inadequate for geographic information. The Aquatic Commons has a high growth rate, and the number of items in it will continue to increase at an exponential rate. To enhance retrieval of information from the system with high precision, a thesaurus must be used for inputting articles into the system. The most tested and therefore the recommended thesaurus is the Aquatic Sciences and Fisheries Thesaurus. In the absence of this, it will be difficult to maximize the accessibility and availability of the information that abounds in the repository.

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Table 4: CHALLENGES IN RETRIEVING INFORMATION ON SPECIALIZED SUBJECT AREAS

Search formation	Title Retrieved	Descriptors Used by the System	Observation/Comment
Fishery Biology	Reference growth rate – a simple and handy parameter summarizing the influence of environmental conditions. Information on Fishery Research no. 58 P. 1-11 by Bethke, Eckhard (2011)	Biology Management	Biology and Management are too broad to describe the article. Growth Rate best described the article but could also be indexed under Fishery Biology and Environmental conditions
	Diagnosis and management constituency of small scale fishes. Penang, Malaysia, WorldFish Center by Evans, L and Andrew N. (2009)	Management Fisheries Aquaculture	Fishery Management and Artisanal Fishery best described the document. Fisheries as a descriptor is too broad. Aquaculture as a descriptor is out of place as a descriptor. The article should not have been retrieved under Fishery Biology because it was not so indexed.
Fish Marketing	Recasting the net, defining a gender: agenda for sustaining life and Livelihoods in fishing communities by Chennai, India, International collective support of Fish workers (2010)	Management Fisheries Policies	The question is, why the article should be retrieved under Fish Marketing , when even the system does not describe the document as such. Going through the abstract the descriptors that best described the document are: Gender, Fisherfolk, Livelihood Artisanal Fishing and women
	Assessment of access to health services and vulnerabilities of female fish trader in the Kafue Flats, Zambia: analysis report by Lungu, A and Husken, S.M.C. (2010)	Health Fisheries Sociology	Why this document should be retrieved under Fish Marketing ? The system does not describe it as such. HIV/AIDS, Women, Public health are better descriptors for the document
Search formation	Title retrieved	Descriptors used by the system	Observation/comment
Cage-culture	Cage culture in reservoirs in India (a handbook) by Das, A.K., Vass, K.K., Shrivastava, N.P. and Katiha, P.K. (2009)	Fisheries Aquaculture	The subject descriptors are too broad. Although the document discussed Fisheries and Aquaculture , the article specifically treated cage culture. Cage culture is the most suitable descriptor. It could also be indexed as Fish culture which is a broader and related term.
	Recommendation domains for pond	Aquaculture	The observation is similar to the cage culture. Aquaculture as a descriptor

	aquaculture: country case study development and status of freshwater aquaculture in Malawi by Russell, A.J.M., Grotz, P.A., Kresemer, S.K. and Pems, D.E. (2008)		is too broad. “ Pond culture and Freshwater Pond Culture would better describe the document. Also Policies, Production and Fishery Management would enhance accessibility to the document.
Fisheries Extension	Identification of larval sea bases by Vanersea, M.l.d. et-at (2008)	Ecology Fisheries Chemistry	Going by the title and abstract of the article, there is no reason why this document should be retrieved under Fisheries Extension because it has not been so described by the system. The specific discussions of the paper are in the area of Identification, Larvae which are good descriptors for the document.
Searching for Geographic information	Attempt was made to search for information on geographic basis		The result shows that many articles retrieved do not correspond with the search. For example when information was search for India, Malaysia, Zambia etc, articles on other countries were retrieved. There is no professional explanation for this.